NUMERICAL AND COMPUTATIONAL METHODS IN ELECTRON CLOUD SIMULATIONS: PRESENT AND FUTURE

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Abstract

In this talk, I will first review the numerical and computational methods of current, state-of-the-art, electron cloud simulation codes. I will then outline the effort directed towards a 3D massive parallel electron cloud simulation code (PARSEC: Parallel Self-consistent 3D Electron-Cloud Simulation in Arbitrary External Fields), foreseen to be capable to perform simulations on realistic accelerator lattices. By combing efficient numerical models with scalable computational methods, we aim to achieve the required accuracy and speed-up (scalability) to achieve most realistic 3D simulations.

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